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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|----------------------|------------------|
| 10/009,640 | 12/14/2001 | Hiroshi Mase | ZU-406 | 9733 |
| 2292 | 7590 | 04/07/2004 | EXAMINER | |
| BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747 | | | GILLIAM, BARBARA LEE | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1752 | |

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

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|------------------------------|--------------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/009,640 | Applicant(s) MASE ET AL. | |
| | Examiner Barbara Gilliam | Art Unit 1752 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,3,5,9,10,12 and 15-28 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,3,9,10,15,18,20,23,25 and 27 is/are rejected.
- 7) ☒ Claim(s) 5,12,16,17,19,21,22,24,26 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>12/29/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed January 8, 2004 been received and entered in the case.
2. Claims 2-3, 5, 9-10, 12 and 15-28 are pending.
3. The objection to the specification is withdrawn.

Priority

4. The Examiner has initiated a search for the priority documents.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 2-3, 9-10, 15, 18, 20, 23, 25, 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Verschueren et al.

a. In US 6,230,621 B1, Verschueren et al. teach a heat sensitive material for making lithographic printing plates comprising on a lithographic support an image forming layer comprising a hydrophilic binder, a cross-linking agent for the hydrophilic binder, metal oxide particles and dispersed hydrophobic thermoplastic polymer particles (claim 1). The heat sensitive material can further comprise an IR sensitive dye

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or pigment as a compound capable of converting light into heat (claims 5 and 6). The heat sensitive material is image-wise exposed to heat resulting in an increase in oleophilicity of the exposed area (claim 8 & column 4, lines 53-56). The printing plates of the Examples were imaged with a thermal printer (column 8, lines 16-19) however according to Verschueren et al. the preferred method for image-wise exposure is with a laser operating in the infrared or near-infrared wavelength range of 700-1500 nm (column 5, lines 1-6). In Example 2, the image forming layer of the printing plate comprises TiO_2 as the metal oxide particles, polyvinyl alcohol as the hydrophilic binder, hydrolyzed tetramethoxysilane as the cross-linking agent, polystyrene as the hydrophobic thermoplastic particles and IR-dye of structure I as the compound capable of converting light into heat (page 6, lines 9-46). When the thermoplastic particles are subjected to a temperature above the coagulation temperature of the hydrophobic thermoplastic particles, they coagulate to form a hydrophobic agglomerate in the hydrophilic layer so that at these parts the hydrophilic layer becomes hydrophobic and oleophilic. Coagulation may result from softening or melting of the thermoplastic polymer particles under the influence of heat (column 3, lines 1-23). The image forming layer of Example 2 meets the present limitations for the photosensitive layer.

b. The Examiner asserts the image forming layer of Verschueren et al. inherently has a hydrophilic phase and hydrophobic phase because the hydrophobic components are not soluble in the hydrophilic medium. The hydrophobic polymer is added to the hydrophilic components of the image forming layer in the form of an emulsion and becomes dispersed therein (Example 2).

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c. According to the current specification, there are two scenarios in which the photosensitive hydrophilic layer loses hydrophilicity and is changed to ink-receptive when exposed to a light of a wavelength of 750 to 1100 nm. In the first case the hydrophobic polymer phase is mainly foamed and in the second case foaming hardly takes place. In first case, the gas which causes foaming is presumed to be generated when the polymerizable functional groups of the cross-linking agent contained in the hydrophobic polymer phase remain in the photosensitive layer, and these residual functional groups undergo a reaction or decomposition to thereby generate a gas. In the second case, the hydrophobic phase has thermoplasticity and the hydrophobic particles are melted by heat (page 31, line 1 – page 33, line 16). The image forming system of Verschueren et al., comprising thermoplastic particles which melt or soften upon exposure to imaging heat, is similar to the second case wherein foaming hardly takes place. Verschueren et al. is silent with respect to any gases or foam generated however the image forming layer of Verschueren et al. comprises a cross-linking agent and a hydrophilic binder in addition to the hydrophobic thermoplastic particles like the photosensitive layer of the present application. Therefore the heat-sensitive layer of Verschueren et al. is expected to foam in the same manner as the present application.

7. Claims 2, 9, 15, 18, 20 and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Leon et al.

a. In US 6,190,830 B1, Leon et al. teach an imaging member comprising a support having thereon a hydrophilic imaging layer comprising a hydrophilic heat-sensitive crosslinked vinyl polymer which is thermally switchable. The polymer

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comprises organoonium groups as repeating units (claim 1). The polymer is rendered more oleophilic upon exposure to heat (column 3, lines 34-46) and is crosslinked by any number of ways, preferably by the reaction of an amine-containing pendant group with a difunctional or trifunctional additive (column 7, line 20 – column 8, line 3). In Example 1, heat sensitive polymer 2 was mixed with a carbon dispersion and a bis(vinylsulfonyl)methane aqueous solution (crosslinker), coated on a substrate, dried and subsequently imaged with laser having a wavelength of 830 nm (column 14, line 63 – column 15, line 22). The printing plate of Leon et al. meets the present limitations for the lithographic printing plate wherein the heat-sensitive vinyl polymer meets the present limitations for the hydrophilic polymer, the carbon dispersion meets the limitations for the light absorbing compound and the bis(vinylsulfonyl)methane aqueous dispersion meets the limitations for the cross-linking agent.

b. It is clear from the teachings of Leon et al. that a hydrophilic phase and hydrophobic phase are present in the image forming layer taught therein. The image forming layer is a hydrophilic layer containing the hydrophilic heat-sensitive polymer comprising organoonium groups. The cross-linking agent, added to the other components of the layer via aqueous dispersion, forms the hydrophobic phase (Examples).

c. According to the current specification, the gas which causes foaming is presumed to be generated when the polymerizable functional groups of the cross-linking agent contained in the hydrophobic polymer phase remain in the photosensitive layer, and these residual functional groups undergo a reaction or decomposition to thereby generate a gas (page 32, line 19 – page 33, line 31). Leon et al. is silent with respect to

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any gases or foam generated however the image forming layer of Leon et al. has the same components as the photosensitive layer of the present application, specifically the cross-linking agent and the hydrophilic binder. Therefore the image forming layer of Leon et al. is expected to foam in the same manner as the present application.

8. Claims 2, 9, 15, 18, 20 and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Van Damme et al.

a. In US 6,096,471, Van Damme et al. teach a heat-sensitive imaging element for providing a lithographic printing plate, comprising a support and a heat switchable image forming top layer comprising a hardened hydrophilic binder and a heat switchable polymer wherein this layer or a layer adjacent thereto comprises a compound capable of converting light into heat. The heat switchable polymer contains aryldiazosulphonate units (claim 1), which is hydrophilic before heating and becomes hydrophobic by heating (column 4, lines 10-18). The compound capable of converting light into heat can be an infrared absorbing dye or pigment (claims 3-4). The image forming layer comprising a cross-linking agent (claim 6). In Example 2, a dispersion comprising TiO_2 , a tetramethylorthosilicate emulsion in water (crosslinker), polyvinylalcohol, IR-2 (infrared dye) and the diazosulphonate copolymer P20 was coated on aluminum substrate, dried, hardened by heating and imaged using a CREO 3244 TRENDSETTER™ (column 11, lines 19-37). The wavelength of the CREO 3244 TRENDSETTER™ is not given but according to Van Damme et al. it is within the range of 700-1500nm (column 9, lines 50-59). The printing plate of Van Damme et al. meets the present limitations for the lithographic printing plate wherein the hardened

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hydrophilic binder meets the present limitations for the hydrophilic polymer, the infrared dye IR-2 meets the limitations for the light absorbing compound and the a tetramethylorthosilicate emulsion meets the limitations for the cross-linking agent.

b. It is clear from the teachings of Van Damme et al. that a hydrophilic phase and hydrophobic phase are present in the heat-sensitive layer taught therein. The heat sensitive layer is a hydrophilic layer containing the hardened hydrophilic binder. The cross-linking agent, added to the other components of the layer via an aqueous emulsion, forms the hydrophobic phase (Example 2). According to the current specification, the gas which causes foaming is presumed to be generated when the polymerizable functional groups of the cross-linking agent contained in the hydrophobic polymer phase remain in the photosensitive layer, and these residual functional groups undergo a reaction or decomposition to thereby generate a gas (page 32, line 19 – page 33, line 31). Van Damme et al. is silent with respect to any gases or foam generated however the heat-sensitive layer of Van Damme et al. has the same components as the photosensitive layer of the present application, specifically the cross-linking agent and the hydrophilic binder. Therefore the heat-sensitive layer of Van Damme et al. is expected to foam in the same manner as the present application.

Response to Arguments

9. Applicant's arguments filed January 8, 2004 have been fully considered but they are not persuasive.

a. Applicant argued the plate of the present application is cross-linked and water-insoluble before being irradiated with light and can become completely without

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need of development by dissolving the unexposed areas of the photosensitive layer with a fountain solution during printing unlike the plate of Verschueren et al. The plate of Verschueren et al. contains an image forming layer which clearly meets the present limitations for the photosensitive layer. The image forming layer of Verschueren et al. contains a hydrophilic layer or a crosslinked hydrophilic binder and preferably crosslinking agents (column 3, line 50 – column 4, lines 4). Therefore the hydrophilic binder is crosslinked before irradiation by light. Additionally, Verschueren et al. clearly states that during exposure, the exposed areas are converted to hydrophobic and oleophilic (ink receptive) areas while the unexposed areas have unchanged hydrophobic particles and said area remains hydrophilic (column 4, lines 53-63). Again the hydrophilic areas comprise hydrophobic thermoplastic particles and crosslinked hydrophilic binder. Therefore the hydrophilic areas are water/fountain solution receptive, but not water-soluble. Applicant is reminded that “[t]he claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977).” MPEP 2112. Although EP 770 494 A is similar to Verschueren et al., the disclosures are different. The Example Applicant has cited does not comprise the thermoplastic particles of Verschueren et al., which is one of the components the Examiner has relied on for rejection. If Applicant wishes to have EP 770 494 A properly considered, please submit the reference on PTO-1449.

b. With respect to the Arguments over Leon et al., the disclosure is not used to reject the present claims comprising the hydrophobic polymer. The hydrophilic

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polymer of the photosensitive layer is rendered oleophilic, therefore the photosensitive layer is rendered oleophilic.

c. With respect to Van Damme et al., there is nothing in the claims of an island-sea structure as argued. Van Damme et al. teaches components which meet the present component limitations. Therefore absent any contrary evidence it is the Examiner's position, the top heat switchable layer also functions the same as the present layer. MPEP 2112.

d. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the plate can become completely without need of development by dissolving the unexposed areas of the photosensitive layer with a fountain solution during printing) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Allowable Subject Matter

10. Claims 5, 12, 16-17, 19, 21, 22, 24, 26 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

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a. There is no teaching or suggestion in Verschueren et al. (US 6,230,621 B1) to specifically use hydrophobic thermoplastic particles having a film forming temperature of not higher than 50° C as required in the present claims. The hydrophobic thermoplastic polymer particles of Verschueren et al. preferably have a coagulation temperature above 50° C. Coagulation may result from softening or melting of the thermoplastic polymer particles under heat (column 3, lines 1-31).

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Gilliam whose telephone number is 571-272-1330. The examiner can normally be reached on Monday through Thursday, 8:00 AM - 5:30 PM.

a. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

b. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Barbara Gilliam

Barbara Gilliam
Examiner
Art Unit 1752
April 5, 2004

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